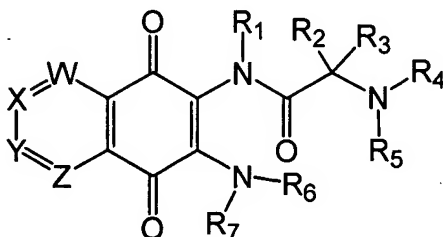


WHAT IS CLAIMED IS:

1. A compound having the structure of Formula (I)



Formula I

wherein

W, X, Y and Z are each selected from a bond, CH, C-R₈, C-R₉, C-R₁₀, C-R₁₁, O (oxygen), N (nitrogen) and S (sulfur) and no more than two of W, X, Y and Z are simultaneously O, N and S;

wherein, R₈, R₉, R₁₀, R₁₁ are each selected from hydrogen, hydroxyl, sulfhydryl, alkoxy, thioalkoxy, alkyl, halogen, CN, CF₃, NO₂, COOR₁₂, CONR₁₂R₁₃, NR₁₂R₁₃, NR₁₂COR₁₃, NR₁₂SO₂R₁₃ and NR₁₄CONR₁₂R₁₃;

wherein R₁₂, R₁₃ and R₁₄ are each selected from hydrogen, alkyl, heteroalkyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, cycloalkyl and heterocycloalkyl;

and wherein NR₁₂R₁₃ is further optionally selected from substituted and unsubstituted mono or bicyclic ring with one to four heteroatoms such as N, O and S;

and further wherein R₁₂ and R₁₄ may form a 4, 5, 6 or 7-membered cyclic ring system;

wherein R₁, R₂, R₃, R₄, and R₅ are each selected from hydrogen, alkyl, substituted or unsubstituted phenyl, substituted or unsubstituted polyaromatic ring, substituted or unsubstituted heteroaromatic ring having hetero atom(s) selected from N, O and S, substituted or unsubstituted aralkyl, substituted or unsubstituted, cyclic or polycyclic, hydrocarbon and

substituted or unsubstituted, monoheterocycle or polyheterocycle (of 3-8 atoms per ring) having one to four hetero atoms selected from N, O, and S; and

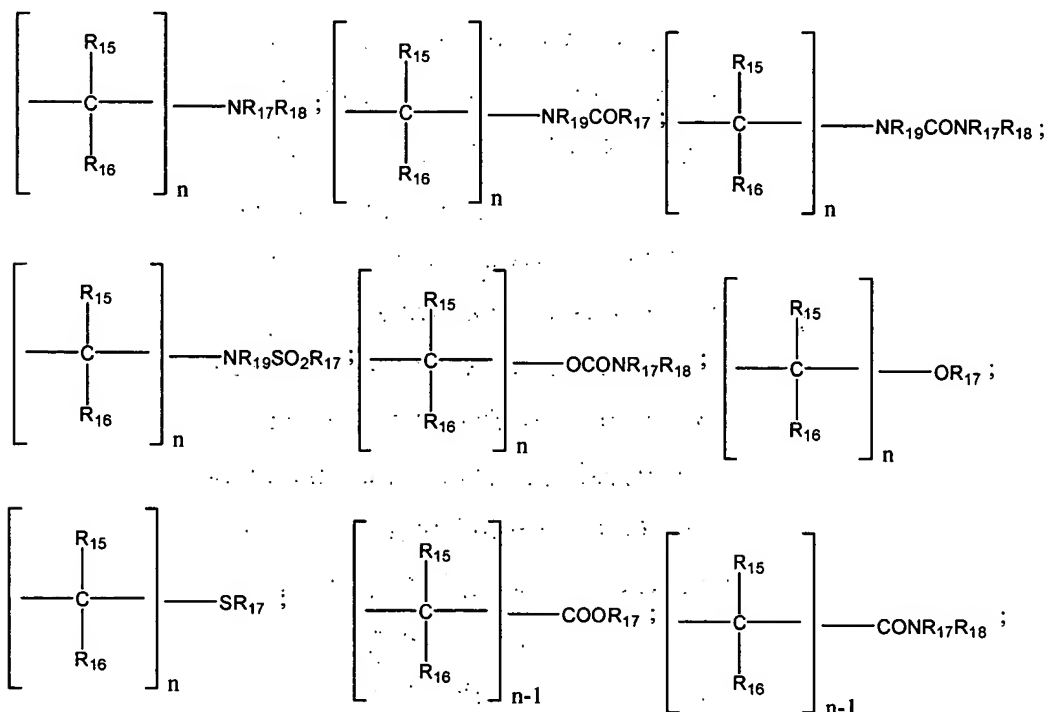
5 and wherein said substitutions are selected from hydrogen, hydroxyl, sulfhydryl, alkoxy, thioalkoxy, alkyl, halogen, CN, CF₃, NO₂, COOR₁₂, CONR₁₂R₁₃, NR₁₂R₁₃, NR₁₂COR₁₃, NR₁₂SO₂R₁₃, and NR₁₄CONR₁₂R₁₃;

10 wherein R₁₂, R₁₃ and R₁₄ are each selected from hydrogen, alkyl, heteroalkyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, cycloalkyl, and heterocycloalkyl;

and wherein NR₁₂R₁₃ may form a substituted and unsubstituted, mono or bicyclic ring with one to four heteroatoms selected from N, O and S;

15 and wherein R₁₂ and R₁₄ may form a 4, 5, 6 or 7-member cyclic ring system;

and wherein R₁, R₄, R₅, R₆ and R₇ are also selected from:



where n is 2, 3 or 4 and R₁₅, R₁₆, R₁₇, R₁₈ and R₁₉ are each selected from hydrogen, alkyl, cycloalkyl, unsubstituted or substituted aryl, unsubstituted or substituted heteroaryl, and unsubstituted or substituted alkylaryl;

NR₁₇R₁₈ may form a substituted or unsubstituted, mono or bicyclic ring with one to four heteroatoms selected from N, O and S;

and wherein R₁₇ and R₁₉ may form a 4, 5, 6 or 7-membered cyclic ring system;

and wherein R₄ may also be selected from -COR₁₇, -SO₂R₁₇, -CONR₁₇R₁₈ and -C(=NR₁₉)NR₁₇R₁₈;

and wherein R₆ and R₇ are each selected from:

alkyl, substituted and unsubstituted phenyl or polyaromatic, substituted or unsubstituted heteroaromatic, wherein said hetero atom is selected from N, O and S, substituted or unsubstituted aralkyl, and substituted or unsubstituted, cyclic or polycyclic hydrocarbon, or mono- or poly-heterocycle of 3 to 8 atom rings having one to four hetero atoms selected from N, O and S; and

wherein said substitutions are selected from hydroxyl, sulfhydryl, alkoxy, thioalkoxy, alkyl, halogen, CN, CF₃, NO₂, COOR₁₂, CONR₁₂R₁₃, NR₁₂R₁₃, NR₁₂COR₁₃, NR₁₂SO₂R₁₃ and NR₁₄CONR₁₂R₁₃;

wherein R₁₂, R₁₃ and R₁₄ are each selected from hydrogen, alkyl, heteroalkyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, cycloalkyl, and heterocycloalkyl;

and wherein NR₁₂R₁₃ may form a substituted or unsubstituted, mono or bicyclic, ring with one to four heteroatoms selected from N, O and S;

and wherein NR₄R₅ and NR₆R₇ may each be selected from substituted and unsubstituted, mono or bicyclic, rings comprising one to four

heteroatoms selected from N, O and S and wherein said N may also be substituted or unsubstituted,

and including salts thereof.

5 2. The compound of claim 1 wherein W and Z are each C-R₈, C-R₁₁ or N and wherein X and Y are each C-R₉ or C-R₁₀.

3. The compound of claim 1 wherein X and Y are each C-R₉, C-R₁₀ or N and wherein W and Z are each C-R₈ or C-R₁₁.

10

4. The compound of claim 1 wherein W is C-R₈ or N and wherein X, Y and Z are each C-R₉, C-R₁₀ or C-R₁₁.

15 5. The compound of claim 1 wherein Z is C-R₁₁ or N and wherein W, Y and Z are each C-R₈, C-R₉ or C-R₁₀.

6. The compound of claim 1 wherein X is C-R₉ or N and wherein W, Y and Z are each C-R₈, C-R₁₀ or C-R₁₁.

20 7. The compound of claim 1 wherein Y is C-R₁₀ or N and wherein W, X, and Z are each CH, C-R₈, C-R₉ or C-R₁₁.

8. The compound of claim 1 wherein W, X, Y and Z are each selected from CH, C-R₈, C-R₉, C-R₁₀ and C-R₁₁.

25

9. The compound of claim 8 wherein W, X, Y and Z are each CH.

10. The compound of claim 1 wherein R₂ and R₃ are each selected from hydrogen, lower alkyl of 1-6 carbons and aryl.

11. The compound of claim 1 wherein R_1 is selected from hydrogen, alkyl, cycloalkyl, unsubstituted or substituted phenyl, unsubstituted or substituted benzyl, -methylpyridine, -ethylpyridine, -methylindole, -ethylindole, alkoxyethyl-, hydroxyethyl-, N,N-dialkyl-ethyl, N,N-dialkyl-propyl, methylpyrrole, -ethylpyrrole, -methylfuran, -ethylfuran, -alkylmorpholine, -alkylpiperizine, -alkylpiperidine, and -alkylpyrrolidine, and wherein R_2 and R_3 are each hydrogen, lower alkyl (1-6 carbon) or aryl.

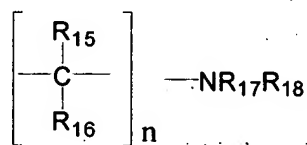
12. The compound of claim 1 wherein R_4 and R_5 are each selected from hydrogen, alkyl, cycloalkyl, unsubstituted or substituted phenyl, unsubstituted or substituted benzyl, -methylpyridine, -ethylpyridine, -methylindole, -ethylindole, alkoxyethyl-, hydroxyethyl-, N,N-dialkyl-ethyl, N,N-dialkyl-propyl, -methylpyrrole, -ethylpyrrole, -methylfuran, -ethylfuran, -alkylmorpholine, -alkylpiperizine, -alkylpiperidine, and -alkylpyrrolidine, or wherein $-NR_4R_5$ is a substituted or unsubstituted, monocyclic or bicyclic, heterocycloalkyl ring, and wherein R_2 and R_3 are each selected from hydrogen, lower alkyl (1-6 carbon) and aryl.

13. The compound of claim 1 wherein R_6 and R_7 are selected from alkyl, cycloalkyl, unsubstituted or substituted phenyl, unsubstituted or substituted benzyl, -methylpyridine, -ethylpyridine, -methylindole, -ethylindole, alkoxyethyl-, hydroxyethyl-, N,N-dialkyl-ethyl, N,N-dialkyl-propyl, -methylpyrrole, -ethylpyrrole, -methylfuran, -ethylfuran, -alkylmorpholine, -alkylpiperizine, -alkylpiperidine, and -alkylpyrrolidine, and R_2 and R_3 are selected from hydrogen, lower alkyl (1-6 carbon) and aryl.

14. The compound of claim 9 wherein R_2 and R_3 are selected from hydrogen, lower alkyl (1-6 carbon) and aryl.

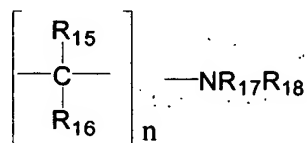
15. The compound of claim 9 wherein R_1 , R_4 and R_5 are each selected from hydrogen, alkyl, cycloalkyl, unsubstituted or substituted phenyl, unsubstituted or substituted benzyl, methylpyridine, -ethylpyridine, -methylindole, -ethylindole, alkoxyethyl-, hydroxyethyl-, N,N-dialkyl-ethyl, N,N-dialkyl-propyl, -methylpyrrole, -ethylpyrrole, -methyldfuran, -ethylfuran, -alkylmorpholine, -alkylpiperazine, -alkylpiperidine, and -alkylpyrrolidine, or wherein $-NR_4R_5$ is a substituted or unsubstituted, monocyclic or bicyclic, heterocycloalkyl ring, and wherein R_2 and R_3 are each hydrogen, lower alkyl (1-6 carbon) or aryl and wherein R_6 and R_7 are each selected from alkyl, cycloalkyl, unsubstituted or substituted phenyl, unsubstituted or substituted benzyl, -methylpyridine, -ethylpyridine, -methylindole, -ethylindole, alkoxyethyl-, hydroxyethyl, N,N-dialkyl-ethyl, N,N-dialkyl-propyl, -methylpyrrole, -ethylpyrrole, -methyldfuran, -ethylfuran, -alkylmorpholine, -alkylpiperazine, -alkylpiperidine, and -alkylpyrrolidine.

16. The compound of claim 1 wherein R_2 and R_3 are each selected from hydrogen and alkyl, and wherein R_4 and R_6 are each selected from alkyl and



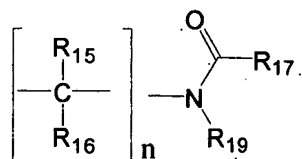
where n is 2, 3 or 4 and one or both of R_5 and R_7 is alkyl.

17. The compound of claim 9 wherein R_1 is alkyl, wherein R_2 and R_3 are each selected from hydrogen and alkyl and wherein R_4 and R_6 are each selected from alkyl and



wherein n is 2, 3 or 4 and one or both of R_5 and R_7 is alkyl.

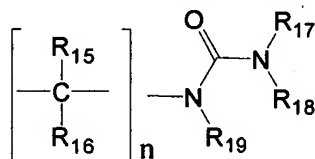
18. The compound of claim 1 wherein R₂ and R₃ are each selected from hydrogen and alkyl, wherein R₄ and R₆ are each selected from alkyl and



wherein n is 2, 3 or 4 and one or both of R₅ and R₇ is alkyl.

5

19. The compound of claim 1 wherein
R₂ and R₃ are each selected from hydrogen and alkyl
wherein R₄ and R₆ are each selected from alkyl and

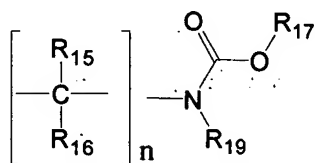


where n is 2, 3 or 4 and one or both of R₅ and R₇ is alkyl

10

20. Compound of claim 1
wherein

R₂ and R₃ are each selected from hydrogen and alkyl
R₄ and R₆ are each selected from alkyl and



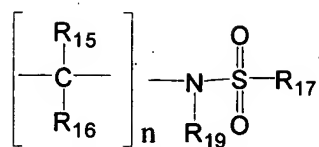
where n is 2,3 or 4 and one or both of R₅ and R₇ is alkyl.

15

21. The compound of claim 1 wherein

R₂ and R₃ are each selected from hydrogen and alkyl
R₄ and R₆ are each selected from alkyl and

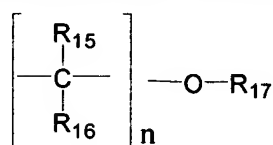
20



where n is 2, 3 or 4 and one or both of R₅ and R₇ is alkyl.

22. The compound of claim 1 wherein

- 5 R₂ and R₃ are each selected from hydrogen and alkyl,
R₄ and R₆ are each selected from alkyl and



where n is 2, 3 or 4 and one or both of R₅ and R₇ is alkyl.

- 10 23. The compound of claim 1 wherein R₁ is methyl.

24. The compound of claim 9 wherein R₁ is methyl.

- 15 25. The compound of claim 1 wherein one or more of R₁, R₆ and R₇ is methyl.

26. The compound of claim 9 wherein one or more of R₁, R₆, and R₇ is methyl.

- 20 27. The compound of claim 23 wherein -NR₄R₅ is a substituted or unsubstituted, monocyclic or bicyclic, heterocycloalkyl ring.

28. The compound of claim 25 wherein -NR₄R₅ is a substituted or unsubstituted, monocyclic or bicyclic, heterocycloalkyl ring.

25

29. The compound of claim 26 wherein -NR₄R₅ is a substituted or unsubstituted, monocyclic or bicyclic, heterocycloalkyl ring.

5 30. The compound of claim 26 wherein -NR₄R₅ is selected from aziridine, pyrrolidine, piperidine, hydroxy piperidine, morpholine, and N-methyl piperazine.

31. The compound of claim 23 wherein R₄ and R₅ are each lower alkylene-OR₂₀ wherein R₂₀ is hydrogen or lower alkyl.

10 32. The compound of claim 25 wherein R₄ and R₅ are each lower alkylene-OR₂₀ wherein R₂₀ is hydrogen or lower alkyl.

33. The compound of claim 26 wherein R₄ and R₅ are each lower alkylene-OR₂₀ wherein R₂₀ is hydrogen or lower alkyl.

15 34. A compound of claim 1 having a structure of Table 1 including salts thereof.

35. A compound of claim 1 having a structure of Table 2 including salts
20 thereof.

36. A compound of claim 1 having a structure of Table 3 including salts thereof.

25 37. A compound of claim 1 having a structure of Table 4 including salts thereof.

38. A compound of claim 1 having a structure of Table 5 including salts thereof.

39. A compound of claim 1 having a structure of Table 6 including salts thereof.

5 40. A compound having a structure of Table 7 or Table 8 including salts thereof.

41. A compound having a structure of Table 9 or Table 10 including salts thereof.

10

42. A compound having a structure of Table 11 or Table 12 including salts thereof.

15 43. A pharmaceutical composition comprising a therapeutically effective amount of a compound of Claim 1 in a pharmaceutically acceptable carrier.

44. A method for preventing or treating a disease associated with a change in levels of expression of a set of genes in a mammal comprising administering to said mammal an effective amount of a compound of Claim 1.

20

45. A method for preventing or treating a disorder modulated by altered gene expression, wherein the disorder is selected from the group consisting of cancer, cardiovascular disorders, arthritis, osteoporosis, inflammation, periodontal disease and skin disorders, by administering to a mammal in need of
25 such treatment a safe and effective amount of a compound according to Claim 1.

46. The method of Claim 45, wherein the disorder is cancer.

47. The method of claim 46 wherein said treatment prevents, arrests or reverts tumor growth and metastasis.

5 48. The method of claim 46 wherein said cancer is selected from the group consisting of solid tumors, lymphomas, skin cancer, urinary bladder cancer, breast cancer, uterine cancer, ovarian cancer, prostate cancer, lung cancer, colon cancer, rectum cancer, pancreatic cancer, kidney cancer, and stomach cancer.

10 49. The method of Claim 48 wherein the cancer is breast or colon cancer.

50. The method of claim 49 wherein said breast or colon cancer is adenocarcinoma.

15 51. The method of Claim 45 wherein the disorder is a cardiovascular disorder selected from the group consisting of dilated cardiomyopathy, congestive heart failure, atherosclerosis, plaque rupture, reperfusion injury, ischemia, chronic obstructive pulmonary disease, angioplasty restenosis, and aortic aneurysm.

20 52. A gene set wherein expression of each member of said gene set is modulated as a result of treatment with a compound of claim 1.

25 53. The gene set of claim 52 wherein expression of each member of said gene set is increased or each member of said gene set is decreased as a result of said treatment.

54. The gene set of claim 52 wherein the members of said gene set are selected from the genes identified in Table 19.

55. The gene set of claim 52 wherein said gene set is present in a cell.

56. A method for identifying an agent that modulates the expression of a
5 gene set of claim 51, comprising:

(a) contacting a compound with a test system containing one or more polynucleotides corresponding to each of the members of the gene set of claim 52 under conditions wherein the members of said gene set are being expressed;

(b) determining a change in expression of each of said one or more polynucleotides
10 of step (a) as a result of said contacting;

wherein said change in expression in step (b) indicates modulation of the members of said gene set thereby identifying said test compound as an agent that modulates the expression of said gene set.

57. The method of claim 56 wherein said change in expression is a
15 decrease in expression of said one or more polynucleotides:

58. The method of claim 56 wherein said change in expression is a change
20 in transcription of said one or more polynucleotides.

59. The method of claim 56 wherein said change in expression is
determined by determining a change in activity of a polypeptide encoded by said
polynucleotide.

60. The method of claim 56 wherein said one or more polynucleotides are
25 present in a cell.

61. The method of claim 60 wherein said cell is a cancer cell.

62. The method of claim 60 wherein said cancer cell is a breast or colon cancer cell.

5 63. The method of claim 62 wherein said breast or colon cancer cell is an adenocarcinoma cancer cell.

64. The method of claim 60 wherein said cell is a recombinant cell engineered to contain said set of genes.

10 65. A set of genes comprising a plurality of subsets of genes wherein each subset of said plurality is a gene set identified by the method of claim 56.

66. Compounds identified as having activity using the method of claim 56.

15 67. The gene set of claim 51 wherein said gene set comprises a subset of the genes of Table 19.

68. The method of claim 56 wherein said compound modulates the expression of a subset of genes of Table 19.

20

69. A compound of claim 1 and having a structure of Table 13 and Table 14 including salts thereof.

25 70. A compound of claim 1 and having a structure of Table 15 and Table 16 including salts thereof.

71. A compound of claim 1 and having a structure of Table 17 and Table 18 including salts thereof.

30